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EXAMINER	
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ART UNIT	PAPER NUMBER
2672	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/691,603	BAI, XUQIANG	
	Examiner	Art Unit	
	Eric V. Woods	2672	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *23 May 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-23* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-23* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

Applicant's arguments -- see pages 1-16 -- filed 23 May 2005, with respect to various objections and rejections have been fully considered and because of applicant's amendments, are found to be persuasive in certain regards. Various objections and rejections have been withdrawn, as set forth below.

The objection to the Abstract is withdrawn.

The objections to the specification generally and to the Brief Summary of the Disclosure specifically are withdrawn in view of applicant's amendments. Examiner thanks applicant for adding the summary paragraph to make it easier to understand.

The objection to claims 4 and 5 stands withdrawn; as noted in the previous Office Action, examiner merely wanted to give applicant a warning concerning those claims in regards to any future revisions.

The objections to claims 3 and 11 stand withdrawn, as applicant has indeed provided definitions for that term in the specification that are sufficient, as on page 22, lines 11-18 of the instant application.

The objections to claims 7-9 and 16-18 stands withdrawn, as applicant has clarified the meaning of the term in the context of the claim, and that interpretation is deemed to be reasonable and the meaning provided is sufficient that any inquiry into the prosecution history will note as much.

Claims 2-3, 11-12, and 20 were never objected to per se; the examiner merely made a suggestion to applicant concerning terminology. However, if there were any such objections, implicit or otherwise, they are withdrawn.

The rejection of claims 1, 10, and 19 under 35 U.S.C. 112, second paragraph, stands withdrawn in view of applicant's amendments.

Applicant's arguments -- see pages 7-13, filed 23 February 2005, with respect to the rejection(s) of claim(s) 1-20 under 35 U.S.C. 103(a) in view of Kazuyuki in view of Goodman and various tertiary references have been fully considered and are persuasive. Therefore, the rejections have been withdrawn. However, upon further consideration, a new ground(s) of rejection is made as set forth below in view of applicant's amendment, which justified changing the grounds of rejection to address the new limitation concerning the meaning of font character space, and thusly the finality of this Office Action.

Applicant's arguments have been fully considered but are not persuasive in certain regards.

The objection to the declaration will not be withdrawn until applicant files a corrected oath and declaration; examiner acknowledges that applicant intends to do so, but until such a document is filed the objection cannot be withdrawn.

In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e. that the position storing section would be aware of how far the characters are from the edges of the character boxes) are not recited in the rejected claim(s). The claimed

language in for examples claims 1 and 11 merely require that the character positional information storage section store the layout of the form so that the location of each character can prima facie be known, that is that once the form is scanned, the computer known which character it should find in each space. Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Further, applicant does not dispute examiner's assertion that Kazuyuki teaches the first and fifth limitations of the instant claim 1. Secondly, the only thing that examiner has to prove in respect to Kazuyuki and the second limitation of claim 1 is that Kazuyuki is aware of the location of the character boxes on the form, as clearly shown in Drawings 2 and 3. Clearly, as shown in Drawing 4 and [0023-0026], the system is aware of the location of each box and the character that is stored in that box.

Examiner disputes applicant's assertion that the term "normalized" is being misused or misconstrued by examiner. In the art of OCR, the term has a somewhat different meaning – see for example Platt (patent number provided in the below rejection) in 5:5-6:26, where the term "normalize" is taken to include scaling and other operations to make the OCR operation invariant – particularly in 5:16-28, where the scaling makes height and width both equal to one among other operations in such a way that the character is not stretched).

Oath/Declaration

The oath or declaration is defective. A new oath or declaration in compliance with 37 CFR 1.67(a) identifying this application by application number and filing date is required. See MPEP §§ 602.01 and 602.02.

The oath or declaration is defective because:
It does not identify the citizenship of each inventor, that is, the inventor's country of citizenship is given as 'Chinese', which is a description of a generic nationality, not a country. Further, it is unclear whether the country of citizenship is the People's Republic of China (PRC) or the Republic of China (ROC) a.k.a. Taiwan. This must be corrected.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1, 10, and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kazuyuki in view of Naoi et al (US PGPub 2003/0113016 A1) in view of Naoi et al

(JP 07-028937)('Naoi JP'), which Naoi incorporates by reference in [0212] and Platt et al (US 5,812,698).

As to claims 1, 10, and 19,

An apparatus for handwritten character font generation comprising:

-A character image extraction section configured to extract character image data of a handwritten character filled into a character entry box from image data scanned from a character entry sheet in which the handwritten character is filled into the character entry box corresponding to respective character codes; (Kazuyuki pg. 4 – e.g. paragraph [0010], and pg. 5, paragraphs [0011] and [0012], which clearly describe a character entry sheet in which handwritten characters are entered, and that such images are scanned using image scanner 5 in Drawing 1, and that such characters are read out and correlated to their real-world images.) (Naoi teaches in Fig. 10 various steps, including for example, extracting character box (S23), type of box determination (S24), and determining whether or not character touches character box (S25). Now, as part of this, the system shown in Fig. 14 is shown, where the position, type, size of character box, character type, etc. (see element 42, labeled 'Definition Object'), which means that the character position is stored, among other things. As in element 30 of Naoi in Fig. 14, there is the extracting-ruled-line, extracting character box, and extracting black-touching-character-box touching character sections, which perform processing similar to that of applicant. Next, the forms with the text boxes (as specified by applicant) are set forth in Figs. 29A-29C for example, with regular definition as set forth therein. The specific box character box having certain known dimensions is shown in Fig. 21 for

example.)(However, the most relevant drawing is probably Naoi Figs. 31A-31E, where a box having a mapping as set forth by applicant in for example Drawings 3 and 7 of the instant applicant, that is the system measures the height and width of the area around the character.)

-A character positional information storage section configured to store character positional information of font character space, which indicates an area being allowed to be occupied by a character and defined for each of characters; (Clearly as set forth above, Naoi teaches that the information is stored somewhere, and clearly in Fig. 15 of Naoi, the system has a work memory, an image memory, a program memory, and a memory coupled to the scanner. Clearly, the CPU also inherently has memory that consists of registers. Therefore, it would be obvious to one of ordinary skill in the art that since the invention is implemented by software, and that the system of Naoi clearly is, that the positional information computed during the execution of the program would be stored in one of the memories shown in Fig. 15. Naoi JP clearly detects the amount of overlap of the character with another frame or even if the character contacts the frame of the box – see for example paragraphs [0022-0024] and drawings 19, 20, 14, 12, and many others with the system shown in Drawing 1. Next, as specified in [0045-0049], particularly [0045], the system calculates the location of the sides of the character box, and clearly locates the typeface (e.g. character) and calculates its location with respect to the character box and calculates the distances on the sides.)(Specifically, Naoi teaches in Figure 34C that a circumscribing rectangle is formed around the edge of the detected character, which given the previous context about how Naoi enables the

detection of character boxes and the rest of the details on processing, proves that Naoi in fact does calculate the position of characters with respect to the character boxes and store that position to allow for later processing (which may include removal of the character box lines).)(Finally, Naoi clearly teaches as established above that the layout of the form can be stored by the system, which is, as recited in the Response to Arguments section, the only thing that this limitation specifically requires. For example see Fig. 14, where layout analysis takes place, which can be according to rules provided that form the layout of the form per se, e.g. step S2 in Fig. 10 of Naoi, as in, "applying layout". Clearly, since Kazuyuki teaches such a form with the characters in known positions, the layout could be stored in Naoi as set forth above. Finally, note that Naoi clearly teaches in [0430-0448] that the size, shape, etc. of a character and the amount of variation from its character box are calculated.)(As stated in the Response to Arguments above concerning Kazuyuki, as shown in Drawing 4 and [0023-0026], the system is aware of the location of each box and the character that is stored in that box – see particularly Drawings 2(a-b) and 3(a-d). Further, Kazuyuki clearly calculates the bounding boxes for the characters as shown in Figs. 2(a-b) and 3(a-d) and [0017-0025].)

-A character positional information calculation section configured to calculate the amount of movement for moving the extracted character image data to a character position of the font character space defined in the character positional information; (As established above, Naoi clearly calculates a bounding quadrilateral around the character, which means that the position of the character is inherently known. Naoi JP

and Naoi establish as above that the system knows the layout of the form, and knows the location of each character box (the form of Kazuyuki has known locations for character boxes, and that layout would be passed to the system of Naoi). Therefore, the ratio of the bounding rectangle to character box would be known (see Naoi JP [0045-0049] for example), as the positions and size of each of those would be prima facie known to the system of Naoi JP. Therefore, the information required to perform this calculation would prima facie be known. Finally, note that Naoi clearly teaches in [0430-0448] that the size, shape, etc. of a character and the amount of variation from its character box are calculated.)(As stated in the Response to Arguments above concerning Kazuyuki, as shown in Drawing 4 and [0023-0026], the system is aware of the location of each box and the character that is stored in that box – see particularly Drawings 2(a-b) and 3(a-d). Clearly, if such information were known, it would therefore be trivial to calculate the amount of movement required to move it to the desired location (e.g. center of the character box), as it would simply be the difference between the two locations. Kazuyuki very clearly sets forth in [0019-0024] that the system is aware of the location of each character within the character box – specifically as it relates to Drawings 2(a-b) and 3(a-d).)

-A character position alignment section configured to move the character image data to the character position of the font character space defined in the character positional information, based on the calculated amount of movement; and (Kazuyuki at least hints at this limitation, and examiner contends that Kazuyuki teaches it in [0021], where that publication reads *inter alia*, "When ... a text is constituted, height, width of face, and up-

and-down physical relationship are connected so that it may be arranged tidily." While the translation is not absolutely perfect, it is clear from the context – and drawings to which it refers – that when a character is input into the system by scanning and recognized, the above-mentioned processing occurs to it. It is further clear from the context of [0021-0024] that centering a character would be logical. Such is well known in the art of OCR and the like. However, as further proof of this, the Platt reference brought in, where Platt clearly teaches in Fig. 2 a process for processing OCR characters. The first step in the process – 30, scale character – is performed and then the strokes constituting the character are resampled (32) and the stroke geometry measured (34). Furthermore, as set forth in 5:5-6:20, the character in step 30 is scaled or **normalized**. In the art of OCR, the term has a somewhat different meaning – see for example Platt in 5:5-6:26, where the term "normalize" is taken to include scaling and other operations to make the OCR operation invariant – particularly in 5:16-28, where the scaling makes height and width both equal to one among other operations in such a way that the character is not stretched (6:5-6:20). Platt teaches in step 34 clearly (6:30-35) that the character is **centered** in the unit box that it is scaled to. This clearly teaches the character position alignment section configured to move the character image data to the desired character box (e.g. font character space defined by applicant) -A character font generation section configured to generate font characters of the handwritten character font based on the moved character image data. (Kazuyuki pgs. 4 and 5, Detailed Description, [0010-0013])

As set forth previously, Kazuyuki is directed to a system similar to applicant's that takes in a handwritten sheet containing characters, performs various types of processing upon it, and generates a font using the individual's handwriting. Naoi and Naoi JP (which are the same, as one is incorporated into Naio by reference, so examiner does not have to justify this combination) teach a system that is designed to perform handwriting recognition in a manner similar to that recited in Kazuyuki, but in much more detail and in ways that allow more flexibility in precisely how the OCR processing is done. Platt is directed to neural networks that analyze handwriting and provide better ways to recognize and normalize characters.

Motivation to combine Naoi and Naoi JP with Kazuyuki is taken from several facts. Firstly, Naoi provides "high precision" in recognizing characters [Naio [0022]], and secondly Naoi allows for effective recognition of non-characters, e.g. segmentation of other items on a form (such as stray marks, fiducial marks, alignment stripes, bar codes, and the like)(see Naio Fig. 7, units 26-27 and 28-29 in non-character recognition system 25). Those would improve on the system of Kazuyuki and it is well known in the art that having better OCR systems would be advantageous.

As set forth above, all references are analogous art and directed to the same problem solving area. The system of Kazuyuki clearly deals with processing input, handwritten characters using OCR techniques based on scanned images, as do the Naio and Platt references, which are clearly directed to scanned, handwritten images and documents, and the techniques taught by Naio and Platt would clearly help the

system of Kazuyuki compensate for characters drawn partially outside of the desired drawing area.

As such, it would have been obvious to one having ordinary skill in the art at the time the invention was made to combine the inventions of Kazuyuki, Naio, and Platt as set forth above, since they are directed to the same problem solving area and clearly the techniques of Naio and Platt would allow the Kazuyuki to rescale characters that were drawn at least partially outside of the desired drawing areas for such characters and use that information – Kazuyuki may provide this functionality but is silent to it, and motivation as set forth above in addition.

The addition of Platt would further enable effective OCR, because Platt teaches that scaling and centering (that is, scaling, re-sampling and measuring stroke geometry) each character – 5:10-21 – makes OCR invariant as to the size of the character firstly, and secondly that normalizing and centering such characters is part of the scaling process – 5:22-6:46, with emphasis on 6:30-35.

Finally, the scaling, normalization, and "measuring stroke geometry" (e.g. steps 30, 32, and 34 of Fig. 2 of Platt, which collectively are normalization type steps) clearly would result in the characters being moved, since both their position and size would be altered from the original, and that clearly constitutes "movement".

As to claims 2, 11, and 20,

The apparatus of claim 1, further comprising

-A character circumscribed quadrilateral calculation section configured to calculate a circumscribed quadrilateral of a character position of the character image data from the

extracted character image data, wherein: (Clearly, as shown in Figs. 2(a-b) and 3(a-d) of Kazuyuki in [0019-0024] the system using bounding boxes around each character, where such rectangles are prima facie "circumscribed quadrilaterals")(Platt clearly teaches in 5:25-6:15, particularly in 5:25-5:40 that the step 40A in Fig. 3 teaches the computation of a bounding box for each character)(As set forth in the rejection to claim 1 above, which is incorporated by reference, Kazuyuki, Naio, and Platt all perform character segmentation and extraction as set forth previously)

-The character positional information section calculates the amount of movement for moving the calculated circumscribed quadrilateral position of the font character space defined in the character positional information; and (As established above, Naoi clearly calculates a bounding quadrilateral around the character, which means that the position of the character is inherently known. Naoi JP and Naoi establish as above that the system knows the layout of the form, and knows the location of each character box (the form of Kazuyuki has known locations for character boxes, and that layout would be passed to the system of Naoi). Therefore, the ratio of the bounding rectangle to character box would be known (see Naoi JP [0045-0049] for example), as the positions and size of each of those would be prima facie known to the system of Naoi JP. Therefore, the information required to perform this calculation would prima facie be known. Finally, note that Naoi clearly teaches in [0430-0448] that the size, shape, etc. of a character and the amount of variation from its character box are calculated.)(As stated in the Response to Arguments above concerning Kazuyuki, as shown in Drawing 4 and [0023-0026], the system is aware of the location of each box and the character

that is stored in that box – see particularly Drawings 2(a-b) and 3(a-d). Clearly, if such information were known, it would therefore be trivial to calculate the amount of movement required to move it to the desired location (e.g. center of the character box), as it would simply be the difference between the two locations. Kazuyuki very clearly sets forth in [0019-0024] that the system is aware of the location of each character within the character box – specifically as it relates to Drawings 2(a-b) and 3(a-d).)

-The character position alignment section moves the character image data to the character position of the font character space defined in the character positional information by moving the character portion of the character image data, based on the calculated amount of movement. (This limitation is the same as that set forth in the rejection to claim 1 above, and further Naio teaches segmenting out non-character information to be analyzed in other ways; Kazuyuki clearly teaches that bounding boxes are drawn around characters, and that those are isolated from marks that are found to be punctuation, see for example [0020], notation, and those are checked to determine whether or not they are alphabetic characters, which clearly teaches this limitation. See also the relevant sections of the rejection to claim 1.)

Motivation and combination is taken from the rejection to claim 1 above.

As to claims 3 and 12,

The apparatus of claim 2, wherein

-The character positional information includes information about a ratio of a top blank to a bottom blank and a ratio of a left blank to a right blank of the circumscribed quadrilateral in the font character space. (Kazuyuki teaches this limitation in [0023]

where it is disclosed that characters have different size ratios and so would need to be size renormalized in any case. Kazuyuki at least hints at this limitation, and examiner contends that Kazuyuki teaches it in [0021], where that publication reads *inter alia*, "When ... a text is constituted, height, width of face, and up-and-down physical relationship are connected so that it may be arranged tidily." While the translation is not absolutely perfect, it is clear from the context – and drawings to which it refers – that when a character is input into the system by scanning and recognized, the above-mentioned processing occurs to it. It is further clear from the context of [0021-0024] that centering a character would be logical. Such is well known in the art of OCR and the like. However, as further proof of this, the Platt reference brought in, where Platt clearly teaches in Fig. 2 a process for processing OCR characters. The first step in the process – 30, scale character – is performed and then the strokes constituting the character are resampled (32) and the stroke geometry measured (34). Furthermore, as set forth in 5:5-6:20, the character in step 30 is scaled or **normalized**. In the art of OCR, the term has a somewhat different meaning – see for example Platt in 5:5-6:26, where the term "normalize" is taken to include scaling and other operations to make the OCR operation invariant – particularly in 5:16-28, where the scaling makes height and width both equal to one among other operations in such a way that the character is not stretched (6:5-6:20). Platt teaches in step 34 clearly (6:30-35) that the character is **centered** in the unit box that it is scaled to. This clearly teaches the character position alignment section configured to move the character image data to the desired character box (e.g. font character space defined by applicant)

Motivation and combination are incorporated by reference from the rejection to claim 2 above.

As to claims 4-6 and 13-15,

The apparatus of claim 1, wherein

-The character positional information includes information, which defines fiducial characters corresponding to each of specific characters and information, which defines a positional relation between each of the specific characters and each of the position fiducial characters respectively.

Clearly, reference Kazuyuki teaches this, for example see the Figure on the front page of the abstract or Drawing 2 (or 3), which clearly shows the specified fiducials or characters in row (a), and the handwritten version in row (b) below. The position or location of the fiducials is specified as set forth in the Drawing. Specifically, the layout of the sheet on which the characters are displayed is known, and clearly a specified layout clearly establishes positional relationships between all relevant characters. Since only the primary reference is utilized, no separate motivation or combination is required and that from the rejection to the parent claim is herein incorporated by reference.

As to claims 7-9 and 16-18,

The apparatus of claim 4, wherein the specific characters includes voiced sound characters among Hiragana characters and Katakana characters, p-sound characters among Hiragana characters and Katakana characters, and Roman numerals of a lower-case character.

Reference Kazuyuki teaches all these limitations, specifically the use of Katakana characters in [0022], the use of Hiragana characters in [0026], Roman numerals and letters of both cases in Drawing 4, and it is presumed that drawings 5 and 7 reflect Japanese characters in both cases as well as p-sound characters and voiced sound characters, which are known to those of ordinary skill in the art to be among generally written Katakana and Hiragana characters. Kazuyuki contains these, and applicant's invention is stated to be basically an improvement of the Kazuyuki invention. In any case, it would have been obvious to one of ordinary skill in the art at the time the invention was made to so modify the invention of Kazuyuki (if necessary) to include such characters, as they represent a large portion of the Japanese character set that would obviously be desirable to have for writing. Motivation and combination from the rejection to claim 1 is herein incorporated via reference for any supporting elements. (For secondary issues, e.g. incorporation from dependent claims farther down the claim tree, the rejection to claims 2 and 3 above are incorporated by reference.)

As to claims 21-23 (same claim language, merely different dependencies, since the same references are used to reject all of them, the same rejection is equally valid on all of them). (The rejection to claim 1 is herein incorporated by reference.)

The apparatus of claim 1, wherein

-The character positional information storage section is configured to store the character positional information of a positional fiducial character including an ordinary character defined for each positional fiducial character, (Clearly Kazuyuki teaches the recited positional fiducials in for example Drawings 4-7, and the system knows where those

are. Further, Naio clearly teaches (as set forth in the rejection to claim 1) that the system knows the positions of items on the form and its layout.)

-The character positional information calculation section is configured to define the character positional information of a specific character including the positional fiducial character based on the character positional information of the positional fiducial character when the handwritten character corresponding to character image data extracted by the character image extraction section is the specific character, and is configured to calculate the amount of movement for moving the extracted character image data of the specific character to a character position in the font character space defined in the character positional information of the specific character based on the character positional information of the specific character. (Secondly, Naio clearly teaches methods of determining where characters are and extracting them regardless of whether or not they actually fall into their boxes (see for example Naio JP as cited previous, various figures for example Drawing 15). Clearly, given that Naio knows the position of the characters, it would be obvious that only the character that belonged at the desired position of the fiducial would stored there after that character was recognized.)

Firstly, it is noted from applicant's specification that Figs. 10A and 10B are representative of the recited positional fiducials, e.g. that a printed version of the desired character is shown on the sheet; the position of that printed character is therefore prima facie known.

The additional details of this claim, and motivation and combination, are taken from the rejection to claim 1 above.

Claims 1, 10, and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kazuyuki in view of Platt et al (US 5,812,698).

As to claim 1,

An apparatus for handwritten character font generation comprising:

-A character image extraction section configured to extract character image data of a handwritten character filled into a character entry box from image data scanned from a character entry sheet in which the handwritten character is filled into the character entry box corresponding to respective character codes; (Kazuyuki pg. 4 – e.g. paragraph [0010], and pg. 5, paragraphs [0011] and [0012], which clearly describe a character entry sheet in which handwritten characters are entered, and that such images are scanned using image scanner 5 in Drawing 1, and that such characters are read out and correlated to their real-world images.)(Platt clearly teaches character extraction in Fig. 1, where the user writes characters on a tablet (e.g. 3:50-4:40))

-A character positional information storage section configured to store character positional information of font character space, which indicates an area being allowed to be occupied by a character and defined for each of characters; (As stated in the Response to Arguments above concerning Kazuyuki, as shown in Drawing 4 and [0023-0026], the system is aware of the location of each box and the character that is stored in that box – see particularly Drawings 2(a-b) and 3(a-d). Further, Kazuyuki clearly

calculates the bounding boxes for the characters as shown in Figs. 2(a-b) and 3(a-d) and [0017-0025].)

-A character positional information calculation section configured to calculate the amount of movement for moving the extracted character image data to a character position of the font character space defined in the character positional information; (As established above, Kazuyuki (see Figs. 2 and 3 for example) clearly calculates a bounding quadrilateral around the character, which means that the position of the character is inherently known. Kazuyuki Fig. 10 establishes as above that the system knows the layout of the form, and knows the location of each character box (the form of Kazuyuki has known locations for character boxes). Therefore, the ratio of the bounding rectangle to character box would be known. Therefore, the information required to perform this calculation would prima facie be known. As stated in the Response to Arguments above concerning Kazuyuki, as shown in Drawing 4 and [0023-0026], the system is aware of the location of each box and the character that is stored in that box – see particularly Drawings 2(a-b) and 3(a-d). Clearly, if such information were known, it would therefore be trivial to calculate the amount of movement required to move it to the desired location (e.g. center of the character box), as it would simply be the difference between the two locations. Kazuyuki very clearly sets forth in [0019-0024] that the system is aware of the location of each character within the character box – specifically as it relates to Drawings 2(a-b) and 3(a-d).)

-A character position alignment section configured to move the character image data to the character position of the font character space defined in the character positional

information, based on the calculated amount of movement; and (Kazuyuki at least hints at this limitation, and examiner contends that Kazuyuki teaches it in [0021], where that publication reads *inter alia*, "When ... a text is constituted, height, width of face, and up-and-down physical relationship are connected so that it may be arranged tidily." While the translation is not absolutely perfect, it is clear from the context – and drawings to which it refers – that when a character is input into the system by scanning and recognized, the above-mentioned processing occurs to it. It is further clear from the context of [0021-0024] that centering a character would be logical. Such is well known in the art of OCR and the like. However, as further proof of this, the Platt reference brought in, where Platt clearly teaches in Fig. 2 a process for processing OCR characters. The first step in the process – 30, scale character – is performed and then the strokes constituting the character are resampled (32) and the stroke geometry measured (34). Furthermore, as set forth in 5:5-6:20, the character in step 30 is scaled or **normalized**. In the art of OCR, the term has a somewhat different meaning – see for example Platt in 5:5-6:26, where the term "normalize" is taken to include scaling and other operations to make the OCR operation invariant – particularly in 5:16-28, where the scaling makes height and width both equal to one among other operations in such a way that the character is not stretched (6:5-6:20). Platt teaches in step 34 clearly (6:30-35) that the character is **centered** in the unit box that it is scaled to. This clearly teaches the character position alignment section configured to move the character image data to the desired character box (e.g. font character space defined by applicant)

-A character font generation section configured to generate font characters of the handwritten character font based on the moved character image data. (Kazuyuki pgs. 4 and 5, Detailed Description, [0010-0013])

As set forth above, all references are analogous art and directed to the same problem solving area. The system of Kazuyuki clearly deals with processing input, handwritten characters using OCR techniques based on scanned images, as do the Platt references, which are clearly directed to scanned, handwritten images and documents, and the techniques taught by Platt would clearly help the system of Kazuyuki compensate for characters drawn partially outside of the desired drawing area.

As such, it would have been obvious to one having ordinary skill in the art at the time the invention was made to combine the inventions of Kazuyuki and Platt as set forth above, since they are directed to the same problem solving area and clearly the techniques of Platt would allow the Kazuyuki to rescale characters that were drawn at least partially outside of the desired drawing areas for such characters and use that information – Kazuyuki may provide this functionality but is silent to it, and motivation as set forth above in addition.

The addition of Platt would further enable effective OCR, because Platt teaches that scaling and centering (that is, scaling, re-sampling and measuring stroke geometry) each character – 5:10-21 – makes OCR invariant as to the size of the character firstly, and secondly that normalizing and centering such characters is part of the scaling process – 5:22-6:46, with emphasis on 6:30-35.

Finally, the scaling, normalization, and "measuring stroke geometry" (e.g. steps 30, 32, and 34 of Fig. 2 of Platt, which collectively are normalization type steps) clearly would result in the characters being moved, since both their position and size would be altered from the original, and that clearly constitutes "movement".

As to claims 2, 11, and 20,

The apparatus of claim 1, further comprising

-A character circumscribed quadrilateral calculation section configured to calculate a circumscribed quadrilateral of a character position of the character image data from the extracted character image data, wherein: (Clearly, as shown in Figs. 2(a-b) and 3(a-d) of Kazuyuki in [0019-0024] the system using bounding boxes around each character, where such rectangles are prima facie "circumscribed quadrilaterals")(Platt clearly teaches in 5:25-6:15, particularly in 5:25-5:40 that the step 40A in Fig. 3 teaches the computation of a bounding box for each character)(As set forth in the rejection to claim 1 above, which is incorporated by reference, Kazuyuki, Naio, and Platt all perform character segmentation and extraction as set forth previously)

-The character positional information section calculates the amount of movement for moving the calculated circumscribed quadrilateral position of the font character space defined in the character positional information; and (As stated in the Response to Arguments above concerning Kazuyuki, as shown in Drawing 4 and [0023-0026], the system is aware of the location of each box and the character that is stored in that box – see particularly Drawings 2(a-b) and 3(a-d). Clearly, if such information were known, it would therefore be trivial to calculate the amount of movement required to move it to the

desired location (e.g. center of the character box), as it would simply be the difference between the two locations. Kazuyuki very clearly sets forth in [0019-0024] that the system is aware of the location of each character within the character box – specifically as it relates to Drawings 2(a-b) and 3(a-d).)(Platt further sets forth that the scaling and movement is performed as taught in the rejection to claim 1 above)

-The character position alignment section moves the character image data to the character position of the font character space defined in the character positional information by moving the character portion of the character image data, based on the calculated amount of movement. (Kazuyuki clearly teaches that bounding boxes are drawn around characters, and that those are isolated from marks that are found to be punctuation, see for example [0020], notation, and those are checked to determine whether or not they are alphabetic characters, which clearly teaches this limitation. See also the relevant sections of the rejection to claim 1.)

Motivation and combination is taken from the rejection to claim 1 above.

As to claims 3 and 12,

The apparatus of claim 2, wherein

-The character positional information includes information about a ratio of a top blank to a bottom blank and a ratio of a left blank to a right blank of the circumscribed quadrilateral in the font character space. (Kazuyuki teaches this limitation in [0023] where it is disclosed that characters have different size ratios and so would need to be size renormalized in any case. Kazuyuki at least hints at this limitation, and examiner contends that Kazuyuki teaches it in [0021], where that publication reads *inter alia*,

"When ... a text is constituted, height, width of face, and up-and-down physical relationship are connected so that it may be arranged tidily." While the translation is not absolutely perfect, it is clear from the context – and drawings to which it refers – that when a character is input into the system by scanning and recognized, the above-mentioned processing occurs to it. It is further clear from the context of [0021-0024] that centering a character would be logical. Such is well known in the art of OCR and the like. However, as further proof of this, the Platt reference brought in, where Platt clearly teaches in Fig. 2 a process for processing OCR characters. The first step in the process – 30, scale character – is performed and then the strokes constituting the character are resampled (32) and the stroke geometry measured (34). Furthermore, as set forth in 5:5-6:20, the character in step 30 is scaled or **normalized**. In the art of OCR, the term has a somewhat different meaning – see for example Platt in 5:5-6:26, where the term "normalize" is taken to include scaling and other operations to make the OCR operation invariant – particularly in 5:16-28, where the scaling makes height and width both equal to one among other operations in such a way that the character is not stretched (6:5-6:20). Platt teaches in step 34 clearly (6:30-35) that the character is **centered** in the unit box that it is scaled to. This clearly teaches the character position alignment section configured to move the character image data to the desired character box (e.g. font character space defined by applicant)

Motivation and combination are incorporated by reference from the rejection to claim 2 above.

As to claims 4-6 and 13-15,

The apparatus of claim 1, wherein

-The character positional information includes information, which defines fiducial characters corresponding to each of specific characters and information, which defines a positional relation between each of the specific characters and each of the position fiducial characters respectively.

Clearly, reference Kazuyuki teaches this, for example see the Figure on the front page of the abstract or Drawing 2 (or 3), which clearly shows the specified fiducials or characters in row (a), and the handwritten version in row (b) below. The position or location of the fiducials is specified as set forth in the Drawing. Specifically, the layout of the sheet on which the characters are displayed is known, and clearly a specified layout clearly establishes positional relationships between all relevant characters. Since only the primary reference is utilized, no separate motivation or combination is required and that from the rejection to the parent claim is herein incorporated by reference.

As to claims 7-9 and 16-18,

The apparatus of claim 4, wherein the specific characters includes voiced sound characters among Hiragana characters and Katakana characters, p-sound characters among Hiragana characters and Katakana characters, and Roman numerals of a lower-case character.

Reference Kazuyuki teaches all these limitations, specifically the use of Katakana characters in [0022], the use of Hiragana characters in [0026], Roman numerals and letters of both cases in Drawing 4, and it is presumed that drawings 5 and 7 reflect Japanese characters in both cases as well as p-sound characters and voiced

sound characters, which are known to those of ordinary skill in the art to be among generally written Katakana and Hiragana characters. Kazuyuki contains these, and applicant's invention is stated to be basically an improvement of the Kazuyuki invention. In any case, it would have been obvious to one of ordinary skill in the art at the time the invention was made to so modify the invention of Kazuyuki (if necessary) to include such characters, as they represent a large portion of the Japanese character set that would obviously be desirable to have for writing. Motivation and combination from the rejection to claim 1 is herein incorporated via reference for any supporting elements. (For secondary issues, e.g. incorporation from dependent claims farther down the claim tree, the rejection to claims 2 and 3 above are incorporated by reference.)

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Eric V. Woods whose telephone number is 571-272-7775. The examiner can normally be reached on M-F 7:30-4:30 alternate Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Razavi can be reached on 571-272-7664. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Eric Woods

JEFFREY BRIER
PRIMARY EXAMINER

19 June 2005